

United States Marine Corps

Road Map



The road to success for

Machinist

MOS: 2161-2181



DRAFT



TRAINING AND EDUCATION

CONTINUUM

What is a Training and Education (T&E) Continuum?

T&E Continuums were developed to provide a roadmap for the training and education of Marines in their military occupational specialty (MOS). The goal of the T&E Continuum is to develop the best possible Marine, whether it is a first term or career Marine.

What is a T&E MOS Roadmap?

MOS Roadmaps are just what the name implies - a roadmap through the T&E Continuum from Private through MGySgt/SgtMaj - a roadmap to success in the Marine Corps.

Do I have to follow the Roadmap?

Yes and no. The roadmap has four major sub-areas:

- Skill Progression (MOS)
- Common Skills & Professional Military Education (PME)
- Billet Progression & Unit Training
- Voluntary Education (VolEd)

Some of the training is mandatory, for example entry-level training (Boot Camp, MCT, MOS School, etc...). Some may be directed by your chain of command and some is voluntary. We recommend you find a mentor that can help you along the way, or you can seek assistance from your OIC/SNCOIC. Roadmaps are a guide, but as always there are several ways to get where you want to go.

What does the roadmap do for me?

Two things:

1. Provides you a guide to success as a Marine and towards technical mastery.
2. Provides you with an education that will transfer to civilian life when you decide to leave the Marine Corps.

How do I get started?

You already have. All your training up to this

As we mentioned earlier roadmaps have four major sub-areas that we will briefly explain here.

Skills Progression Training is training that will make you a better Marine in your MOS. It is a combination of formal schools, Marine Corps Institute (MCI) courses, National Standard Certification testing, and civilian education that develops your technical proficiency. It is progressive in that you will learn things as you need them and can apply them to your billet and mission.

Common Skills and PME. This is training that makes you a better Marine. PME requirements are already well established in the Marine Corps. It consists of resident courses, MCIs and required reading. The Corporal's Course, Sergeant's Course, etc... are not mandatory, but it is important for your career and growth as a leader to attend. These courses are designed to teach you what you need to know to be a Cpl or Sgt, so you should attend as soon as, or before, you are promoted.

Billet Assignment and Unit

Training is hands-on experience; there is no better training. Billet progression provides you with the opportunity to develop by accepting new, more demanding responsibilities and performing new, more difficult tasks. Unit training as prescribed in the Training & Readiness (T&R) manual focuses on the skills you need to accomplish in your MOS that require a collective effort and aids the commander in preparing his unit for combat operations.

Voluntary Education was designed to provide you an uncomplicated way to complete a degree while making you a better Marine. The three major considerations of the VolEd roadmap was class availability (especially while deployed), use of free electives, and education required as you progress in rank and billet assignments.

Private - PFC



2161 Road Map

1st

Year

SKILL PROGRESSION TRAINING

ACE Recommended Credit

- Basic Machinist's Course⁽¹⁾
SH Milling Machine Ops

[\(ACE Identifier\)](#)

(MC-1723-0010)

3

Measurements

3 SH Lathe Operations
3 SH Precision

Theory

3 SH Machine Shop

- MCI (1334H) Math for Marines⁽¹⁾ [\(MC-1107-0001\)](#)

0 SH
ACE

Enroll in Uniformed Services Military Apprenticeship

0 SH

4 SH (1)
(1)

Program USMAP (0296M) ⁽¹⁾

[\(MC-2204-0088\)](#)

- Recruit Training⁽¹⁾

PhysFit (2) Marksmanship

[\(MC-2204-0105\)](#)

3

Orienteering

- Marine Combat Training⁽¹⁾

SH Military Skills

- MCI (3420E) Personal Financial Mgmt

[\(MC-1401-0009\)](#)

1

SH Financial Management

- MCI (0210B) Terrorism for Marines

[\(MC-1606-0010\)](#)

1

SH Intro to Terrorism

BILLET ASSIGNMENT / UNIT TRAINING Complete Tan Belt Qualification in MCMAI⁽¹⁾ 0 SH

- Machinist with Division Wings on FSSC unit (MASP) if required

- Unit training should focus on the collective events established in the Training &

Readiness Manual for this specific grade

ACE Recommended

Credit

* College Algebra

3 SH Math

* Denotes College Courses

⁽¹⁾Denotes Entry-Level Training

Credit Tally for:

Applied Science "Technical Studies" Associate

Arts and Sciences Electives 30 SH Minimum			Applied Professional
Humanities	Social Sciences/History	Natural Science/Math	30 SH Maximum a.k.a. (Free Electives)
		(3) * College Algebra	(3) Mill Operations (3) Lathe Operations (3) Precision Measurements (3) Machine Shop Theory (2) Marksmanship (1) Orienteering (3) Military Skills (1) Finance Mgmt (1) Terrorism
(0) Total	(0) Total	(3) Total	(20) Total



2161 Road Map

PFC-LCpl

— 2nd Year —

SKILL PROGRESSION TRAINING

Recommended Credit

* Computer Aided Drafting

- Complete 1000 hours in USMAP

([ACE Identifier](#))

3 SH Drafting

(1000 hours total)

ACI

COMMON SKILLS TRAINING / PME

ACE

Recommended Credit

- MCI (0033) Fundamentals of M.C. Ldrshp ([MC-1406-0023](#))

1 SH

Supervisory management

- MCI (3316E) Basic Nutrition ([MC-1729-0041](#))

1 SH Nutrition

- Complete Gray Belt Qualification in MCMAP 0 SH

- Read 2 books from the Marine Reading List

BILLET ASSIGNMENT / UNIT TRAINING

- Machinist with Division, Wing, or FSSG unit

- Lance Corporals may apply for Marine Security Guard (MSG) duty as a "watch stander"

- Unit training should focus on the collective events established in the Training &

Readiness Manual for this specific grade

VOLUNTARY EDUCATION

ACE Recommended Credit

* Economics I (Macro)

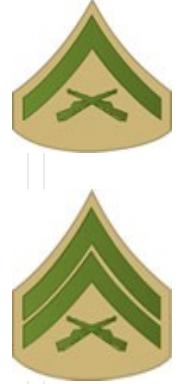
3 SH Economics

* English 101

3 SH English

Credit Tally for: Applied Science "Technical Studies" Associate Degree

Arts and Sciences Electives 30 SH Minimum			Applied Professional
Humanities	Social Sciences/History	Natural Science/Math	30 SH Maximum a.k.a. (Free Electives)
(3) * English 101	(3) * Economics I	(3) * College Algebra	(3) Mill Operations (3) Lathe Operations (3) Precision Measurements (3) Machine Shop Theory (2) Marksmanship (1) Orienteering (3) Military Skills (1) Finance Mgmt (1) Terrorism (3) * Drafting (1) Supervisor Mgmt (1) Nutrition
(3) Total	(3) Total	(3) Total	(25) Total



2161 Road Map

LCpl-Cpl

—3rd Year—

SKILL PROGRESSION TRAINING

(ACE Identifier)

ACE Recommended Credit

* Technical Graphics I

- MCI (0410B) MIMMS (MC-1717-0011) 0 SH
- Complete an additional 1000 hours in USMAP (2000 hours total)

3 SH Drafting

COMMON SKILLS TRAINING / PME

ACE

Recommended Credit

- Complete the Corporal's Course (Resident) (MC-1405-0051) 4
SH (3) Management (1) Mil Stud
- MCI (3422A) Basic Pay and Allowances (MC-1401-0016) 1
SH Finance
- MCI (001A) Principles Instruction f/NCOs (MC-1406-0028) 3 SH
Instructional Methodology

BELIEF ASSESSMENT UNIT TRAINING

Completed with Divisional Wing Qualification CAP 0 SH

- Read 2 books from the Marine Wing Reading List
- Lance Corporals and Corporals may apply for MSG duty as a "watch stander"
- Unit training should focus on the collective events established in the Training &

Readiness Manual for this specific grade

ACE Recommended

Credit

- * US History I 3 SH History
- * Speech 101 3 SH Oral
- Communications
- * Physical Science w/Lab 4 SH
- Physical Science

**Credit Tally for:
Applied Science "Technical Studies" Associate
Degree**

Arts and Sciences Electives 30 SH Minimum			Applied Professional	
Humanities	Social Sciences/History	Natural Science/Math	30 SH Maximum a.k.a. (Free Electives)	
(3) * English 101 (3) * Speech	(3) * Economics I (3) * History I	(3) * College Algebra (4) * Physical Science	(3) Mill Operations (3) Lathe Operations (3) Precision Measurements (3) Machine Shop Theory (2) Marksmanship (1) Orienteering (3) Military Skills (1) Finance Mgmt (1) Terrorism	(3) * Drafting (1) Supervisor Mgmt (1) Nutrition (3) * Drafting (3) Management (1) Military Studies (1) Finance (3) Instruct Methods
(6) Total	(6) Total	(7) Total	(36) Total	

Cpl - Sgt

—4th Year—



2161 Road Map

SKILL PROGRESSION TRAINING

(ACE Identifier)

ACE Recommended Credit

* Technical Graphics II

3 SH Drafting

- Complete an additional 1000 hours in USMAP total)

(3000 hours)

COMMON SKILL TRAINING / PME

Credit

- MCI (8010) Sergeant's DEP (MC-2204-0127)

8 SH (5) Mil Science, (2)

Mgmt (1) Lang

- MCI (0201) Intel Brief: Southwest Asia International Studies

(MC-1511-0001)

2 SH

- Complete Green Belt Instructor Course Martial Arts Instruction

(MC-1406-0088)

3 SH

BILLET ASSIGNMENT / UNIT TRAINING

- Read 2 books from the Marine Reading List unit

- Sergeants may apply for MSG, Drill Instructor, Recruiter or Formal School Instructor (check

the ACE guide for recommended college credits for these specific special duty billets)

- Unit training should focus on the collective events established in the Training &

VOLUNTARY EDUCATION

Readiness Manual for this specific grade

Credits

ACE Recommended

* Arts/Music/Philosophy Elective

3 SH Humanities

* US History II

3 SH History

* Economics II

3 SH Economics

Credit Tally for:

Applied Science "Technical Studies" Associate Degree

Arts and Sciences Electives 30 SH Minimum			Applied Professional	
Humanities	Social Sciences/History	Natural Science/Math	30 SH Maximum a.k.a. (Free Electives)	
(3) * English 101 (3) * Speech (1) Language (3) * Arts/Music/Phil	(3) * Economics I (3) * History I (2) International Studies (3) * History II (3) * Economics II	(3) * College Algebra (4) * Physical Science	(3) Mill Operations (3) Lathe Operations (3) Precision Measurements (3) Machine Shop Theory (2) Marksmanship (1) Orienteering (3) Military Skills (1) Finance Mgmt (1) Terrorism (3) * Drafting	(1) Supervisor Mgmt (1) Nutrition (3) * Drafting (3) Management (1) Military Studies (1) Finance (3) Instruct Methods (3) * Drafting (5) Military Science (2) Management
(10) Total	(14) Total	(7) Total	(46) Total	

****This completes the requirements for an Associates in Applied Science as prescribed by a SOCMAR School****



Sergeant

5th-7th

Year

SKILL PROGRESSION TRAINING

Recommended Credit

- Intermediate Machinists Course Yet to be developed
- * Manufacturing Materials and Processes 3 SH UL

Manufacturing

- MCI (1344C) Construction Print Reading (MC-1601-0041) 3 SH
- Architectural Blueprinting

COMMON SKILL TRAINING SUPPLIES

- (MC-1601-0041) MIMMS for Supervisors (MC-1717-001) ACE 1 SH

Management Credit

- Attendees additional Sergeant course USMAP (5000 hours total) 5 SH

(2)Ldrshp (3) Mil Science

- MCI (7100) SNCO Career DEP (MC-2204-0139) 4 SH (3) Military Science (1) Ldrshp

- MCI (0335C) Infantry Patrolling (MC-2204-0136) 1 SH Physical Education

BIGEY ASSIGNMENT UNIT TRAINING

Science

Machinist with Division, Wing, FSSG or I&I unit

- MCI (8017) Weapons (MC-2204-0132) 0 SH (Pre-school f/Sets Course)

- Read 2 books per year from the Marine Reading List

- the ACE guide for recommended college credits for these specific special duty billets)

- Unit training should focus on the collective events established in the

VOLUNTARY EDUCATION

- * Political Science 3 SH Political Science

- * Psychology 101 3 SH Psychology

- * Intro to Statistics 3 SH Mathematics

- * Educational Psychology 3 SH

Psychology

- * Economics Elective 3 UL SH Economics

- * Financial Management 3 UL SH

Finance

- * History Elective 3 UL SH History

Credit Tally for: 3 UL SH History

Bachelor of Science/Liberal Arts Degree

Arts and Sciences Electives 60 SH Minimum (21 Upper Level)			Applied Professional 60 SH Maximum (9 Upper Level) a.k.a. (Free Electives)		
Humanities	Social Sciences/ History	Natural Science/Math	(3) Mill Operations (3) Lathe Operations (3) Precision Meas (3) Machine Shop Thy (2) Marksmanship (1) Orienteering (3) Military Skills (1) Finance Mgmt (1) Terrorism (3) * Drafting	(1) Supervisor Mgmt (1) Nutrition (3) * Drafting (3) Management (1) Military Studies (1) Finance (3) Instruct Methods (3) * Drafting (5) Military Science (2) Management	(3) UL * Mfacturing (3) Blueprinting (1) Management (2) Leadership (3) Military Sci (3) Military Sci (1) Leadership (3) Military Sci (3) * UL Fin Mgmt
(3) * English 101 (3) * Speech (1) Language (3) * Arts/Music/ Philosophy Elec	(3) * Economics I (3) * History I (2) Internat Studies (3) * History II (3) * Economics II (3) * Political Sci (3) * Psychology (3) * Educ Psych (3) * UL Economics (3) * UL History	(3) * College Algebra (4) * Physical Science (3) * Statistics			
(10) Total	(29) Total	(10) Total	(68) Total		

2161 Road Map

(ACE Identifier)

ACE



2161 Road Map

8th-13th

Staff Sergeant

YearSKILL PROGRESSION TRAINING

(ACE Identifier)

ACERecommended Credit

- MCI (2100) Advanced Supervisor's Course Yet to be developed
- Pass ASE test Cylinder Head Machine (M1G) 4 SH Machining
- Pass ASE test Cylinder Block Specialist (M2G) 4 SH Machining
- Complete an additional 3000 hours in USMAP (8000 hours total)

(Contact Base Education Office to finalize apprenticeship documentation)COMMON SKILLS TRAINING / PME Recommended Credit

- Attend SNCO Career Course (Resident) (MC-2204-0074) 9
SH (6) Mil Stud, (2) Ldrshp
(1) Physical Fitness

BILLET ASSIGNMENT / UNIT TRAINING

- Maintenance Chief with Divisional Wing, FSSG (MC-1404-0011) 1

Staff Sergeants may apply for MSG, Drill Instructor, Recruiter or Formal

School Instructor Readiness Books per year from the Marine Reading List Program
(check the ACE guide for recommended college credits for these specific special duty billets)VOLUNTARY EDUCATION

- Unit training should focus on the collective events established in the Training & Readiness Manual for this specific grade

- * Business Writing 3 UL SH Language
- * Natural Science Elective 3 UL SH
- Psychology
- * Logistics Engineering 3 UL SH Logistics
- * Math/Science Elective 3 UL SH Math
- * History Elective 3 UL SH History
- * Ethics 3 UL SH Humanities

Credit Tally for:**Bachelor of Science/Liberal Arts Degree**

Arts and Sciences Electives 60 SH Minimum (21 Upper Level)			Applied Professional 60 SH Maximum (9 Upper Level) a.k.a. (Free Electives)		
Humanities	Social Sciences/ History	Natural Science/Math			
(3) * English 101 (3) * Speech (1) Language (3) * Arts/Music/ Philosophy Elec (3) * UL Languag (3) * UL Human	(3) * Economics I (3) * History I (2) Internat Studies (3) * History II (3) * Economics II (3) * Political Sci (3) * Psychology (3) * Educ Psych (3) * UL Economics (3) * UL History (3) * UL History	(3) * College Algebra (4) * Physical Science (3) * Statistics (3) * Psychology (3) * UL Math/Scienc	(3) Mill Operations (3) Lathe Operations (3) Precision Meas (3) Machine Shop Thy (2) Marksmanship (1) Orienteering (3) Military Skills (1) Finance Mgmt (1) Terrorism (3) * Drafting (1) Supervisor Mgmt (1) Nutrition	(3) * Drafting (3) Management (1) Military Studies (1) Finance (3) Instruct Methods (3) * Drafting (5) Military Science (2) Management (3) UL * Mfacturing (3) Blueprinting (1) Management (2) Leadership	(3) Military Sci (3) Military Sci (1) Leadership (3) Military Sci (3) * UL Fin Mgmt (4) Machining (4) Machining (6) Mil Studies (2) Leadership (3) Mil Science (1) Leadership (1) Finance (3) * UL Logistics
(16) Total	(32) Total	(16) Total	(93) Total		

****This completes the requirements for a Bachelor of Science/Liberal Arts Degree as prescribed by a SOCMAR school****



Gunnery Sergeant

13th-18th

Year

SKILL PROGRESSION TRAINING

ACE Recommended Credit

- Attend Ground Ordnance Chief's Course
UL SH Maint Management

(ACE Identifier)

(MC-1717-0008)

3

COMMON SKILLS TRAINING / PME

Credit

- Attend the SNCO Advanced Course
Mil Science (3) Ldrshp
- MCI (7400) War fighting Skills (DEP)
Military Studies

ACE Recommended

(MC-2204-0076)

13 SH (7)

(2) Phys Fit (1) Public Speaking

(MC-2204-0112)

2 SH

BILLET ASSIGNMENT / UNIT TRAINING

- Maintenance Chief with Division, Wing, FSSG or I&I unit
- Gunnery Sergeants may apply for MSG, Drill Instructor, Recruiter or Formal School Instructor
(check the ACE guide for recommended college credits for these specific special duty billets)
- Unit training should focus on the collective events established in the Training &

Readiness Manual for this specific grade

VOLUNTARY EDUCATION

ACE Recommended Credit

- Listed below are the requirements for a Masters of Science in "Management" degree
- (This roadmap has provided a foundation for entry into a Master's degree program, this particular program is available on-line with 2 weekend residency requirements).

- Recommend application to an Advanced Degree Completion Program, however, if not selected,
this degree program offers the greatest flexibility that we have found.

* Professional Leadership Development I (residency) 1 GL SH
Management

* Organizational Theory and Behavior 6 GL SH
Management

* Human Resource Management 3 GL SH Management

* Economic Issues in Organizations 3 GL SH Management

* Organizational Management and Leadership I 3 GL SH
Management

* Organizational Research 3 GL SH
Management

* Organizational Management and Leadership II 3 GL SH
Management

* Finance and Accounting for Managers 3 GL SH
Management

* Professional Leadership Development II (residency) 1 GL SH

2161 Road Map

Master Sergeant

19th-22nd Year



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SKILL PROGRESSION TRAINING

(ACE Identifier)

ACE

Recommended Credit

- Attend Marine Corps Logistics Education Program (MCLEP)

COMMON SKILLS TRAINING / PME

ACE

Recommended Credit

- Attend the 1stSgt & MSgt seminar
- MCI (8510) Amphibious Warfare School (DEP) Phase I Mgmt (MC-2204-0113) 5 SH (3) Mil Stud (2)
- MCI (8600) Amphibious Warfare School (DEP) Phase II Stud (2) Mgmt (MC-2204-0114) 5 SH UL (3) Mil
- Read 2 books per year from the Marine Reading List Program

BILLET ASSIGNMENT / UNIT TRAINING

- Ordnance Chief with FSSG, I&I, SOI, Recruit or Logistics Depots
- Special Duty recommendations: Senior Marine Instructor/Chief Instructor at a formal school, Maintenance Analyst at Marine Corps Logistics Chain Analysis Team, Production Chief at MCCDC or serve as the Occupational Field Monitor
- Unit training should focus on the collective events established in the Training & Readiness Manual for this specific grade

VOLUNTARY EDUCATION

ACE Recommended Credit

- Continue to apply for Advanced Degree Completion and/or continue to pursue masters degree



Master Gunnery Sergeant

SKILL PROGRESSION TRAINING

ACE Recommended Credit

(ACE Identifier)

COMMON SKILLS TRAINING / PME

Recommended Credit

ACE

- Attend the SgtMaj & MGySgt Symposium
- Attend Russell Leadership Conference
- MCI (8800) Command & Staff College (DEP) 18 SH UL/GL (3) International Rel

(MC-1408-0025)

Org Mgmt

(3) Mil Stud (3)

History

(3) Theory of War (3) GL Mil

(3) GL National Security

- Read 2 books per year from the Marine Reading List Program

BILLET ASSIGNMENT / UNIT TRAINING

- Ordnance Chief with MEF, FSSG, Division, FMF Pacific or Atlantic
- Special Duty recommendations: Joint Tour
- Unit training should focus on the collective events established in the Training &

Readiness Manual for this specific grade

VOLUNTARY EDUCATION

- Continue to apply for Advanced Degree Completion and/or continue to pursue masters degree

2181 Road Map

NOTES FOR READING THE ROADMAP

General Information

1. Formal Military Schools and MCIs are listed in "BLACK".
2. Lower Level college courses (Freshmen/Sophomore) are listed in "BLUE".
3. Upper level (UL) college courses (Junior/Senior) are listed in Green.
4. American Council on Education (ACE) identifiers gives college and career counselors a reference to validate the recommended credits. The credits listed in this roadmap are current as of 16 January 2004. Updates to these can be found on-line at:
<http://www.militaryguides.acenet.edu>

Skill Progression

1. In addition to MCIs, and Formal MOS schools, certain MOSs can pass national certification testing: National Institute of Metallurgical Society (NIMS) for machinists, Students Excelling through National Standards of Excellence (SENSE) for welders, Automotive Service Excellence (ASE) for mechanics and technicians, etc...
2. Uniformed Services Military Apprenticeship Program (USMAP) is available to most active duty MOSs and is certified by the U.S. Department of Labor. This would qualify you as a journeyman apprentice which could mean a significantly higher starting salary in the civilian work force.

Common Skills/PME

1. This area covers training which is common to all Marines.

Billet Assignment/Unit Training

1. At division assignments you'll be conducting organizational level maintenance and this will give you a good feel for what it takes to fix equipment with limited time and resources.
2. At FSSG and wing assignments you'll

Voluntary Education

1. The voluntary education listed in the roadmap refers specifically to taking college level courses (MCIs and some PME are also " voluntary").
2. The degree program selected in the roadmap is just an example of one you could pursue. Many others are available through the SOCMAR network and can be found at:
<http://www.soc.aascu.org/socmar/HandbookM.html> In selecting the degree program for each MOS, lots of things were taken into consideration (i.e. availability of courses on-line, residency requirements, or other types of correspondence, campus locations, allowable credit transfers from non-traditional learning such as testing (CLEP/DANTES), and experiential learning.
3. Testing can replace the requirement to attend most of the college courses listed in the roadmap. Base education centers offer CLEP and DANTES tests for active duty military at no cost. Study guides for testing for most of the courses are also available at the education centers.
4. ASE exams are also available at the education centers. DANTES will pay for active duty military to take 3 exams per semi-annual year (every 6 months). The tests are offered in the spring and fall of every year and do require, at present, a \$31.00 non-refundable registration fee. ASE exams require documentation of two years experience working in the automotive industry. (LAV, Tank, AAV, engineer, and MT mechanics usually fall in this category and USMAP can help to document this experience).
5. Tuition assistance (T/A) currently pays for 100% of college course tuition. Students must pay for books and study guides. Tuition rates at most community colleges are much cheaper than for 4 year universities. You should consider taking most of your lower level courses through them as it saves the Marine Corps a tremendous amount of money which can